



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

| APPLICATION NO.  | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|--|-------------|----------------------|---------------------|------------------|
| 10/576,099   | 01/31/2007  | Susanne Evans        | R.305866            | 1822             |
| 2119   | 7590        | 05/26/2010           | EXAMINER            |                  |
| RONALD E. GREIGG<br>GREIGG & GREIGG P.L.L.C.<br>1423 POWHATAN STREET, UNIT ONE<br>ALEXANDRIA, VA 22314 |             |                      | MOK, ALEX W         |                  |
|  |             |                      | ART UNIT            | PAPER NUMBER     |
|  |             |                      | 2834                |                  |
|  |             |                      | MAIL DATE           | DELIVERY MODE    |
|  |             |                      | 05/26/2010          | PAPER            |

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

|                              |                                      |                                     |  |
|------------------------------|--------------------------------------|-------------------------------------|--|
| <b>Office Action Summary</b> | <b>Application No.</b><br>10/576,099 | <b>Applicant(s)</b><br>EVANS ET AL. |  |
|                              | <b>Examiner</b><br>ALEX W. MOK       | <b>Art Unit</b><br>2834             |  |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 24 February 2010.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 16-37 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 16-27 and 29-37 is/are rejected.
- 7) ☒ Claim(s) 28 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948)                        | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Amendment*

1. Acknowledgement is made of Amendment filed February 24, 2010.

### ***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 16, 18, 19, 21, 25, 26, 30, 31, 35, and 37 are rejected under 35 U.S.C. 102(b) as being anticipated by Weiland (German Patent Document No.: DE 3021607).

For claim 16, Weiland teaches the rotor including a rotor shaft (reference numeral 3, figures 1, 2), a hollow-cylindrical magnet element (reference numeral 1), and at least one covering disk (reference numeral 5), the improvement wherein the at least one covering disk is secured to the rotor shaft via a first connection (see figures 1, 2), and wherein the magnet element has a first axial end secured to the at least one covering disk via a second connection (figures 1, 2).

For claim 18, Weiland teaches a first covering disk and a second covering disk (reference numeral 5, see figure 1), the first and second covering disks being secured to the rotor shaft (reference numeral 3), and the magnet element being secured on its first

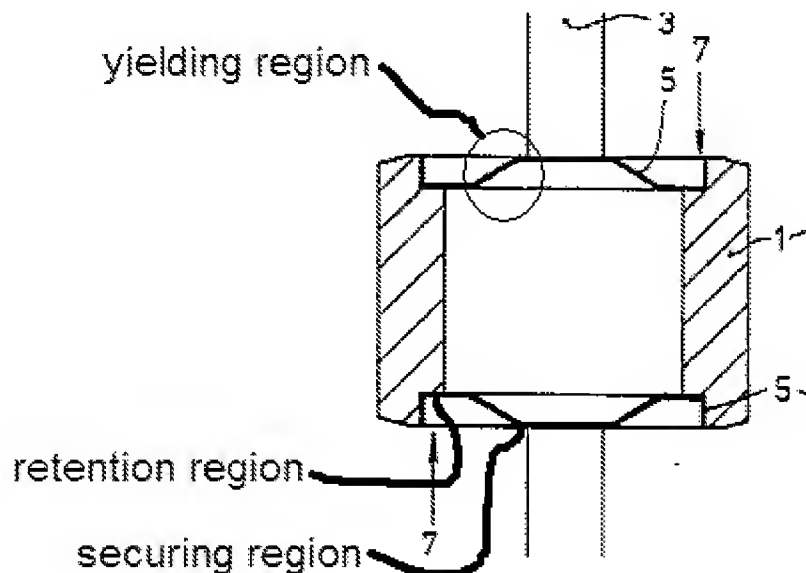
Art Unit: 2834

axial end to the first covering disk and on its second axial end to the second covering disk (figure 1).

For claim 19, Weiland teaches the magnet element being secured to at least one of the covering disk by means of an adhesive (see translation, page 2, tenth paragraph).

For claim 21, Weiland teaches the magnet element being secured to at least one of the covering disk by means of an adhesive as explained for claim 19.

For claim 25, Weiland teaches each said at least one covering disk comprising a yielding region (see figure 1, and figure below).



For claim 26, the yielding region as explained for claim 25 above can constitute a bead extending in the circumferential direction.

For claims 30 and 31, the yielding region as disclosed by Weiland can be considered to be embodied as a connecting region, disposed between a securing region

Art Unit: 2834

and a retention region for the magnet element, and wherein the connecting region is inclined to the securing region (see figure above).

For claim 35, since the reference of Weiland already discloses the rotor as explained for claim 16, then this invention can be applied to any type of machine, such as an electrical machine.

For claim 37, Weiland teaches each said at least one covering disk comprising a yielding region (see figure 1, and figure above).

### ***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 17 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Weiland as applied to claim 16 above, and further in view of Sato et al. (European Patent Document No.: EP 1075073).

For claim 17, Weiland teaches the claimed invention except for the second axial end of the magnet element resting on a shaft shoulder of the rotor shaft. Sato et al. discloses a cylindrical magnet that is resting on the shoulder of the shaft (reference numerals 18, 28, see figure 5), and it would have been obvious to include the magnet resting on the shoulder of the shaft as disclosed by Sato et al. in the invention of Weiland for the purpose of improving the stability of the rotor.

For claim 20, Weiland teaches the magnet element being secured to at least one of the covering disk by means of an adhesive as explained above for claim 19.

6. Claims 22, 27, and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Weiland as applied to claims 16, 18, 25, and 37 above, and further in view of Beeh (US Patent No.: 1996946).

For claim 22, Weiland teaches the claimed invention except for each of the at least one covering disk comprising at least one radially extending slit. Beeh teaches end plates (reference numerals 5, 6, figures 1-3) having slits extending radially (reference numeral 11). It would have been obvious to have the slit configuration as disclosed by Beeh in the invention of Weiland since this technique would provide a person of ordinary skill in the art with a way of giving elasticity to the disks in the radial and axial directions.

For claim 27, Weiland teaches the yielding region comprising a bead extending in the circumferential direction as explained for claim 26 above.

For claim 32, Weiland teaches the claimed invention except for the slit with a length that extends from the outer circumference of the disk to the yielding region. Beeh teaches the slits as explained above for claim 22, and Beeh teaches the slits extending from the outer circumference to the inner region (see figure 1). It would have been obvious to have this slit with a length that extends from the outer circumference of the covering disk to the yielding region as disclosed by Beeh in the invention of Weiland

Art Unit: 2834

since this would give a person of ordinary skill a way of providing compensation in the radial and axial ends.

7. Claims 23 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Weiland as applied to claim 16 above, and further in view of Nagate et al. (US Patent No.: 5508576).

For claims 23 and 24, Weiland teaches the claimed invention except for the radially extending slits of different lengths, with first and second lengths for the radial slits. Having slits of different lengths is a general skill that is already known in the art at the time the invention was made, as exhibited by Nagate et al. (see figure 6), and it would have been obvious to modify these slits of Nagate et al. to have different lengths and have a first length be greater than a second length in the inventions of Weiland and Beeh, as this would provide a person of ordinary skill with a way of further absorbing the thermal expansions of the components.

8. Claim 29 is rejected under 35 U.S.C. 103(a) as being unpatentable over Weiland as applied to claims 16 and 25 above, and further in view of Advolotkin et al. (US Patent No.: 4472650).

For claim 29, Weiland teaches the claimed invention including the yielding region as explained for claim 25 above, but does not specifically disclose the yielding region comprising a region that is substantially U-shaped in section. Advolotkin et al. teach a rotor with a U-shaped yielding region (reference numeral 9, figure 6). It would have

Art Unit: 2834

been obvious to have this U-shaped yielding region as disclosed in Advolotkin et al. in the covering disk of Weiland since Advolotkin et al. use this technique for eliminating the stress caused by the tension in the device (see column 5, lines 7-12), and a person of ordinary skill can apply this configuration for the purpose of relieving thermal expansion between the magnet and the shaft.

9. Claim 33 is rejected under 35 U.S.C. 103(a) as being unpatentable over Weiland as applied to claim 16 above, and further in view of Sato et al. (European Patent Document No.: EP 1075073), Advolotkin et al. (US Patent No.: 4472650), and Uchida (US Patent No.: 5010266).

For claim 33, Weiland teaches the claimed invention including the covering disk being secured axially to the ring magnet by means of adhesive (see translation, page 2, tenth paragraph), but Weiland does not disclose the magnet element being a rare earth element, and a carrier body disposed inside the magnet element which the carrier body is spaced apart from the magnet element by a very small gap in the radial direction and wherein the carrier body is spaced apart from the covering disks in the axial direction by another very small gap, and wherein there is no material in the gaps so that the gaps can be made very small, wherein the cover disks are made from a nonmagnetic special steel. Sato et al. teach the magnet containing rare earth elements (see paragraph [0032]), Advolotkin et al. disclose a carrier body (reference numeral 2, figure 1) disposed inside the magnet (reference numeral 6) and spaced apart from the magnet by a small gap in the radial direction (see figure 1), and the carrier body spaced apart from



Art Unit: 2834

the covering disks (reference numeral 4) in the axial direction by another small gap (see figure 1), and Uchida discloses cover disks made of stainless steel (figure 4, see column 4, lines 30-34), i.e. cover disks made from nonmagnetic special steel. It would have been obvious for a person of ordinary skill to have the rare earth elements in the magnet as disclosed by Sato et al. and have the carrier body and the gaps between the carrier body, magnet, and the covering disks as disclosed by Advolotkin et al. and also the steel material as disclosed by Uchida in the invention of Weiland, since this would provide a person of ordinary skill with a way of minimizing magnetic losses.

10. Claim 34 is rejected under 35 U.S.C. 103(a) as being unpatentable over Weiland as applied to claim 16 above, and further in view of Denk et al. (US Patent No.: 4667123).

For claim 34, Weiland teaches the claimed invention except for a cylindrical guard tube surrounding the magnet element. Denk et al. teach a cylinder (reference numeral 70) for the magnets on the rotor (see figure 4). It would have been obvious to include this tube as disclosed by Denk et al. in the invention of Weiland since Denk et al. uses this technique for protecting the magnets (see column 5, lines 14-19), i.e. avoiding damage to the magnets.

11. Claim 36 is rejected under 35 U.S.C. 103(a) as being unpatentable over Weiland (German Patent Document No.: DE 3021607), and further in view of Beeh (US Patent No.: 1996946).

For claim 36, Weiland teaches the rotor including a rotor shaft (reference numeral 3, figures 1, 2), a hollow-cylindrical magnet element (reference numeral 1), and at least one covering disk (reference numeral 5), the improvement wherein the at least one covering disk is secured to the rotor shaft (see figures 1, 2), and wherein the magnet element has a first axial end secured to the at least one covering disk (figures 1, 2), wherein each said at least one covering disk comprising a yielding region (see figure 1, and figure above for claim 25), and wherein the yielding region as disclosed by Weiland can be considered to be embodied as a connecting region, disposed between a securing region and a retention region for the magnet element, and wherein the connecting region is inclined to the securing region (see figure above for claim 31) for providing both axial and radial yielding. Weiland does not specifically disclose each of said at least one covering disk comprising at least one slit with a length that extends from the outer circumference of the covering disk to the yielding region.

Beeh teaches end plates (reference numerals 5, 6, figures 1-3) having slits extending radially (reference numeral 11), and Beeh teaches the slits extending from the outer circumference to the inner region (see figure 1).

It would have been obvious to have this slit with a length that extends from the outer circumference of the covering disk to the yielding region as disclosed by Beeh in the invention of Weiland since this would give a person of ordinary skill a way of providing compensation in the radial and axial ends.

***Allowable Subject Matter***

12. Claim 28 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: While the prior art teaches some of the limitations of claim 28, the references do not sufficiently disclose the combined features of the claimed invention including the U-shaped yielding region absorbing the difference in expansion between the rotor shaft and the ring magnet, and the yielding region providing for a spring travel in both the axial and the radial directions. Therefore these features in combination with those of the claims it is dependent upon are indicated to be allowable subject matter.

***Response to Arguments***

13. Applicant's arguments with respect to claims 23-27, 29-33, and 36 filed February 24, 2010 have been fully considered but they are not persuasive.

14. In response to the disks of Weiland not being resilient with regard to claims 25 and 26, Weiland still teaches the claimed structure of the covering disk and the yielding region along with the bead comprised by the yielding region as explained in the present action, regardless of whether Weiland discloses these disks to be resilient or not, and also applicant does not provide any evidence that iron, as opposed to steel, would not be a resilient material. Therefore applicant's argument that the disks being made of iron would not make the disks resilient is not persuasive.

Art Unit: 2834

15. In response to applicant's assertion that Weiland has no teaching of a bead extending in the circumferential direction, the applicant's disclosure does not provide any sufficient description of the claimed "bead" other than what is shown in the drawings. Based on what is illustrated in applicant's drawings, the examiner has properly interpreted the reference of Weiland to disclose the bead for the yielding region. Therefore the examiner's rejection of claim 26 is proper, and applicant's assertion that "the wording of the examiner's rejection clearly indicates that this rejection is not proper" (remarks, page 10) is completely unpersuasive. Also the reference of Weiland does show the structure of the yielding region being a connecting region which is inclined to the securing region as explained in the present action for claims 30 and 31, in contrast to applicant's remarks on page 10.

16. In response to Weiland and Beeh not disclosing the slit extending from the outer circumference of the disk to the yielding region, Beeh still teaches slits extending from the outer circumference to the inner region as explained for claim 32 above, and when applied to the invention of Weiland these slits would extend to the yielding region. A person of ordinary skill would still be able to combine the teachings of Beeh and Weiland regardless of whether the disks of Beeh are disclosed to be rigid or not, as the slits of Beeh would still function as intended by the applicant when applied to the disks of Weiland.

17. In response to the slits of Nagate et al. not being used for absorbing thermal expansions and having nothing to do with mounting magnets, the different lengths of slits taught by Nagate et al. are not for an entirely different purpose as asserted by the

Art Unit: 2834

applicant, as Nagate et al. disclose that since the generated torque is uniform as the magnetic force is guided by the slits, this would improve the thermal distribution of the rotor (see column 6, lines 20-30) which would bring further stability to the rotor, and therefore this would provide a logical reason for combining the teachings of Weiland and Nagate et al. as a person of ordinary skill can use the slits for providing thermal expansion of the components and stability to the rotor. In response to Advolotkin et al. not disclosing a U-shaped yielding region, Advolotkin et al. does indeed teach a U-shaped region as illustrated in figure 6, in contrast to applicant's assertion that no part of the "straightened out 'S' shape" of the ribs "can properly be said to be 'U' shaped" (remarks, page 13). Also the disks of Advolotkin et al. supposedly being internal disks does not exclude the teachings of Advolotkin et al. from being applied to the covering disks of Weiland, since the invention of Advolotkin et al. is for eliminating the stress caused by the tension in the device (column 5, lines 7-12), which when applied to Weiland would achieve applicant's goal of relieving thermal expansion. In response to Advolotkin et al. not teaching the same structure as in claim 33 because the recited "very" small gaps are not taught by the references applied against claim 33, the gaps disclosed in Advolotkin et al. as explained in the present action above for claim 33 would still be considered to teach these "very" small gaps, as the term "very" is a relative term that does not provide additional structural limitation to the claim, and because of this the reference of Advolotkin et al. can be properly considered to teach these "very" small gaps. Also claim 33 has been amended to recite additional limitations which have been rejected as being taught by Weiland, Sato et al., Advolotkin

Art Unit: 2834

et al., and Uchida as explained in the present action above. In response to Weiland pointing away from elastic covering disks, Weiland still teaches the covering disk, shaft, and the magnet element as claimed by the applicant, therefore teaching the applicants' invention, regardless of whether or not it discloses elastic disks. Also the radial slits of Beeh can still be applied to Weiland, regardless of whether the magnets of Beeh are different than the magnets of Weiland, as the end plate of Beeh can still be used for the magnets of Weiland and still function as intended by the applicant.

### ***Conclusion***

18. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

19. Any inquiry concerning this communication or earlier communications from the examiner should be directed to ALEX W. MOK whose telephone number is (571)272-

Art Unit: 2834

9084. The examiner can normally be reached on 7:30-5:00 Eastern Time, 1st Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Quyen P. Leung can be reached on (571) 272-8188. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Quyen Leung/  
Supervisory Patent Examiner, Art Unit 2834

/A. W. M./  
Examiner, Art Unit 2834